

Current Weather Station Status – Southwest Alaska Network

The Southwest Alaska Network has vast areas of remote coastal and mountainous terrain and currently no climatic monitoring occurs in these areas. Deployment of RAWS to remote coastal and mountainous locations will help to fill this huge data gap which currently exists in the SWAN.

Accurate weather and climate data are important tools used by natural resource managers. An Alaska weather station inventory was prepared using data from the National Climatic Data Center, the National Water and Climatic Center, the Bureau of Land Management and the National Park Service. Private and government entities operate these weather stations.

Most of the weather stations are located at airports, towns and lodges throughout southwest Alaska. Existing weather stations are located in communities in coastal areas or in broad valley bottoms. Valuable data is generated from this sparse network public and private weather stations. However, southwest Alaska is a very large region and reliance upon a network of stations co-located with human development leaves huge areas unmonitored. Weather stations are absent from remote areas and areas with significant elevation. The exceptions to this are the SNOTEL and RAWS sites, which are typically located in remote locations.

Several programs administered by various federal agencies and private entities deploy and or manage weather stations deployed throughout southwest Alaska. These programs are described below:

1) Cooperative Observer Program administered by the National Weather Service. The NWS COOP was formally created in 1890 under the Organic Act. Its mission is two-fold:

- To provide observational meteorological data, usually consisting of daily maximum and minimum temperatures, snowfall, and 24-hour precipitation totals, required to define the climate of the United States and to help measure long-term climate changes
- To provide observational meteorological data in near real-time to support forecast, warning and other public service programs of the NWS.

2) National Interagency Remote Automated Weather Stations Network (RAWS) managed by various federal and state land managers. There are nearly 1,500 interagency Remote Automated Weather Stations (RAWS) strategically located throughout the United States – mostly in the Western states. These stations monitor the weather. Weather data assists land management agencies with a variety of projects – monitoring air quality, rating fire danger, and providing information for research applications.

3) SNOTEL and Snow Course programs managed by the National Water and Climate Center – a branch of the Natural Resource Conservation Service. The National Water and Climate Center provides real-time Snow and climate data using automated remote sensing from sites in the mountainous regions of the Western United States. SNOTEL stations measure snow water equivalent, snow depth, precipitation, temperature and other climatic elements in hourly, daily, monthly and yearly increments. Manual snow surveys

require two-person teams to measure snow depth and water content at designated snow courses. A snow course is a permanent site that represents snowpack conditions at a given elevation in a given area. A particular snowpack may have several courses. Generally, the courses are about 1,000 feet long and are situated in small meadows protected from the wind. These data are used for forecasting and management of water supplies.

4) Automated Surface Observing System (ASOS) and Automated Weather Observing System (AWOS) managed by the Federal Aviation Administration, National Weather Service and private parties. ASOS and AWOS is a suite of sensors, which measures, collects and broadcasts weather data to help meteorologists, pilots and flight dispatchers prepare and monitor weather forecasts, plan flight routes, and provide necessary information for correct takeoffs and landings. The system provides continuous data on conditions at the runway touchdown level.

A review of the weather station inventory shows that the majority of stations in southwest Alaska are deployed to support the aviation weather mission of the National Weather Service and the Federal Aviation Administration. Aviation is the life-line of many communities in southwest Alaska and this is why weather stations have been deployed for many years in these locations. There are also a good number of NWS COOP stations, mostly concentrated along the road base of the Kenai Peninsula.

KATM and ANIA lack any type of weather station within their boundaries. KEFJ has one NWS COOP weather station located near Exit Glacier and LACL has weather stations at Stoney Strip (RAWS) and in Port Alsworth (RAWS, NWS COOP).

Some communities have more than one weather station, each station operated for specific purposes. In some situations, stations report data to more than one program. For example, at Port Alsworth, Alaska there is a RAWS operated by the National Park Service which collects weather data for resource and fire management objectives. There is also a private weather station that reports climatic data to the NWS COOP program and also reports weather data for aviation objectives to the NWS.

There is private weather station at Big River Lakes (just east of LACL) which reports climatic data to the NWS COOP program and also reports aviation weather to the NWS. Iliamna, Alaska has an ASOS which also participates in the NWS COOP program. Kenai, Alaska has an ASOS which also participates in the NWS COOP program. The Seward area has four NWS COOP stations and an ASOS station. King Salmon has an ASOS which is also a NWS COOP station.

Typically, weather stations record wind speed and direction, temperature and precipitation (rain). Other available sensors measure snow water equivalent, snow depth, fuel moisture, relative humidity, solar radiation and barometric pressure.

Recording year-round precipitation data is critical to a successful long term monitoring program. Recording year-round precipitation will be a challenge in Alaska where so

much of the precipitation falls as snow. Most stations in Alaska measure precipitation in the form of rain and are incapable of measuring precipitation in the form of snow and/or ice. Manned National Weather Service COOP sites are one exception to this situation. SNOTEL sites are the other exception, measuring the snow-water-equivalent in the accumulated snow pack.

Weather data is permanently archived in a variety of databases at the National Climatic Data Center (NCDC) and at regional climatic centers across the USA. Alaska is within the purview of the Western Regional Climatic Center (WRCC) in Reno, Nevada. The mission of the Western Regional Climate Center is to disseminate high quality climate data and information pertaining to the western United States; foster better use of this information in decision-making; conduct applied research related to climate issues; and improve the coordination of climate-related activities at state, regional and national scales. NPS RAWS data will be archived at the WRCC.

SNOTEL and Snow Course data is permanently archived at the National Water and Climate Center (NWCC). The mission of the NWCC to lead the development and transfer of water and climate information and technology in support of natural resource conservation.